

# Message from the Director

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) conducts and supports research to uncover the biological bases for health and disease, and to promote rapid translation of this knowledge into clinical interventions to treat, prevent, or cure diseases within the Institute's mission. In this year's booklet, our fifth annual compendium of NIDDK-supported basic and clinical highlights of research advances and opportunities, we have chosen to underscore the translational aspect of our research portfolio. In describing the translation of insights gained at the laboratory bench into improvements in clinical care at the patient's bedside, we reaffirm that the ultimate goals of biomedical research supported by the Institute include not only the accumulation of knowledge, but also its application to improve the lives of patients who suffer from debilitating and costly diseases.



In December 2003, I established a Translational Research Working Group at the NIDDK, and charged it with identifying obstacles to translational research, developing a process to prioritize translational initiatives, identifying areas where resources would have broad application, and developing ways to address any obstacles to moving forward. As an outgrowth of this process, the NIDDK has now developed several initiatives designed to promote translational research into disease-specific as well as trans-Institute areas. One planned initiative will spur research into identifying new biomarkers—small molecules that are indicative of a disease and readily-measured—for well-defined human diseases for which few, if any, markers exist. For example, biomarkers for fibrosis would be of benefit in a number of diseases, including liver and kidney disease. They would facilitate and make more efficient the conduct of clinical trials and offer hope of earlier intervention in diseases before irreparable organ damage has occurred. Another initiative will seek to apply recent advances in basic research on protein synthesis and processing to a number of diseases caused by defects in the molecular folding of proteins, such as cystic fibrosis. Similarly, the development and validation of new animal models would provide useful tools for determining ways to apply fundamental scientific discoveries to NIDDK-relevant diseases. Yet another effort would support the development of therapeutic approaches to prevent the accumulation of reactive oxygen species, which are induced by elevated blood sugar, as a way to prevent complications of diabetes. Together, these and other initiatives will significantly strengthen the NIDDK translation research portfolio.

We are also working to capitalize on the research investments made possible by the doubling of the NIH budget between 1999 and 2003. With these resources, the NIDDK launched a range of consortia, networks, and clinical trials, while maintaining a strong portfolio of investigator-initiated research. In the post-doubling era, we must extract maximum benefit from this significant investment through the establishment of repositories for biological material collected as part of these studies. These repositories will facilitate additional future research by permitting the extensive use of samples and data collected from previous and future trials. The Institute is also encouraging ancillary studies to existing clinical trials as a way to derive an added benefit from well-characterized sets of patients and biological samples. Research consortia will continue to have a synergistic effect by bringing together scientists to address specific outstanding questions and by pooling scientific talent and resources. Moving forward, these types of efforts will become an increasingly important way for the Institute to make its previous investments the engine of future research opportunities.

The NIDDK has also taken an important role in several projects emerging from the NIH Roadmap for Medical Research. This effort, spearheaded by NIH Director Dr. Elias Zerhouni, is a framework of priorities designed to deepen our understanding of biology, stimulate interdisciplinary research teams, and reengineer clinical research to accelerate medical discovery and improve people's health. The NIDDK has taken a leadership position for the initiative on "Metabolomics Technology Development." The purpose of this initiative is to promote the development of highly innovative and sensitive tools for studying the "metabolome"—amino acids, peptides, lipids, and other small molecules. New technologies, propelled by this initiative, are expected to be broadly relevant to metabolic and other diseases within the NIDDK research mission. Another Roadmap initiative on "Interdisciplinary Research" aims to overcome the current barriers that prevent experts from different fields from working together to advance medical research. Obesity—which is a serious risk factor for type 2 diabetes—is a key example of a disease that could benefit from increased partnerships among different communities. The recent increase in obesity has been fueled by a complex interplay of environmental, social, economic, and behavioral factors, acting on a background of genetic susceptibility. This complex problem requires a multifaceted research effort.

In an effort to enhance communication with our research and patient community, this past year the NIDDK launched a new electronic newsletter, the "NIDDK Director's Update." Approximately twice a year, this update is sent to our National Advisory Council members and to constituency organizations, including patient advocacy groups, disease-specific organizations, and professional organizations. The Director's Update includes information about recent NIDDK activities, as well as on NIDDK-specific plans and trans-NIH issues of importance to the Institute. The NIDDK is also supportive of the NIH Public Trust Initiative, one aspect of which is to promote public participation in NIH-supported clinical research through enhanced transparency.

The research highlights that follow provide a snapshot of the important ongoing work being carried out by an immense network of basic scientists, clinical researchers, and patient volunteers. It is our hope that these advances provide an exciting and promising reflection of the NIDDK's many contributions to the national biomedical research enterprise.

A handwritten signature in dark ink, appearing to read "Allen M. Spiegel".

**Allen M. Spiegel, MD**

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